

**K. RAMAKRISHNAN COLLEGE OF ENGINEERING, SAMAYAPURAM,**  
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**Department of Computer Science and Engineering**  
**OAD1651- WEB TECHNOLOGY NOTES**

**UNIT I**

**WEBSITE BASICS, HTML 5 AND CSS 3**

Web Essentials: Clients, Servers and Communication – The Internet – Basic Internet protocols – World wide web – HTTP Request Message – HTTP Response Message – Web Clients – Web Servers – HTML5 – Tables – Lists – Image – HTML5 control elements – Semantic elements – Drag and Drop – Audio – Video controls - CSS3 – Inline, embedded and external style sheets – Backgrounds – Border Images – Colors – Shadows – Text – Transformations – Transitions – Animations.

**1.1 Web Essentials**

**Server:**

The software that distributes the information and the machine where the information and software reside is called the server. provides requested service to client

e.g., Web server sends requested Web page

**Client:**

The software that resides on the remote machine, communicates with the server, fetches the information, processes it, and then displays it on the remote machine is called the client.

initiates contact with server (“speaks first”)

typically requests service from server

Web: client implemented in browser

**Web server:**

Software that delivers Web pages and other documents to browsers using the HTTP protocol.

**Web Page:**

A web page is a document or resource of information that is suitable for the World Wide Web and can be accessed through a web browser.

**Website:**

A collection of pages on the World Wide Web that are accessible from the same URL and typically residing on the same server.

**URL:**

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Uniform Resource Locator, the unique address which identifies a resource on the Internet for routing purposes.

**Client-server paradigm:**

The Client-Server paradigm is the most prevalent model for distributed computing protocols. It is the basis of all distributed computing paradigms at a higher level of abstraction. It is service-oriented, and employs a request-response protocol.

A server process, running on a server host, provides access to a service. A client process, running on a client host, accesses the service via the server process. The interaction of the process proceeds according to a protocol.

The primary idea of a client/server system is that you have a central repository of information—some kind of data, often in a database—that you want to distribute on demand to some set of people or machines.

**The Internet:**

Medium for communication and interaction in inter connected network.

Makes information constantly and instantly available to anyone with a connection.

**Web Browsers:**

User agent for Web is called a browser:

- Internet Explorer
- Firefox

**Web Server:**

Server for Web is called Web server:

- Apache (public domain)
- MS Internet Information Server

**Protocol:**

Protocols are agreed formats for transmitting data between devices. The protocol determines:

1. The error checking required
2. Data compression method used

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3. The way the end of a message is signaled
4. The way the device indicates that it has received the message

**1.2 Basic Internet Protocols**

- A computer *communication protocol* is a detailed specification of how communication between two computers will be carried out in order to serve some purpose.
- For example, as we will learn, the Internet Protocol specifies both the high-level behavior of software implementing the protocol and the low-level details such as the specific fields of information that will be contained in a communication message,
- the order in which these fields will appear, the number of bits in each field, and how these bits should be interpreted.
- Basic IP's are
  - TCP/IP
  - UDP,DNS & DOMAIN NAMES
  - HIGHER – LEVEL PROTOCOLS

**TCP /IP :**

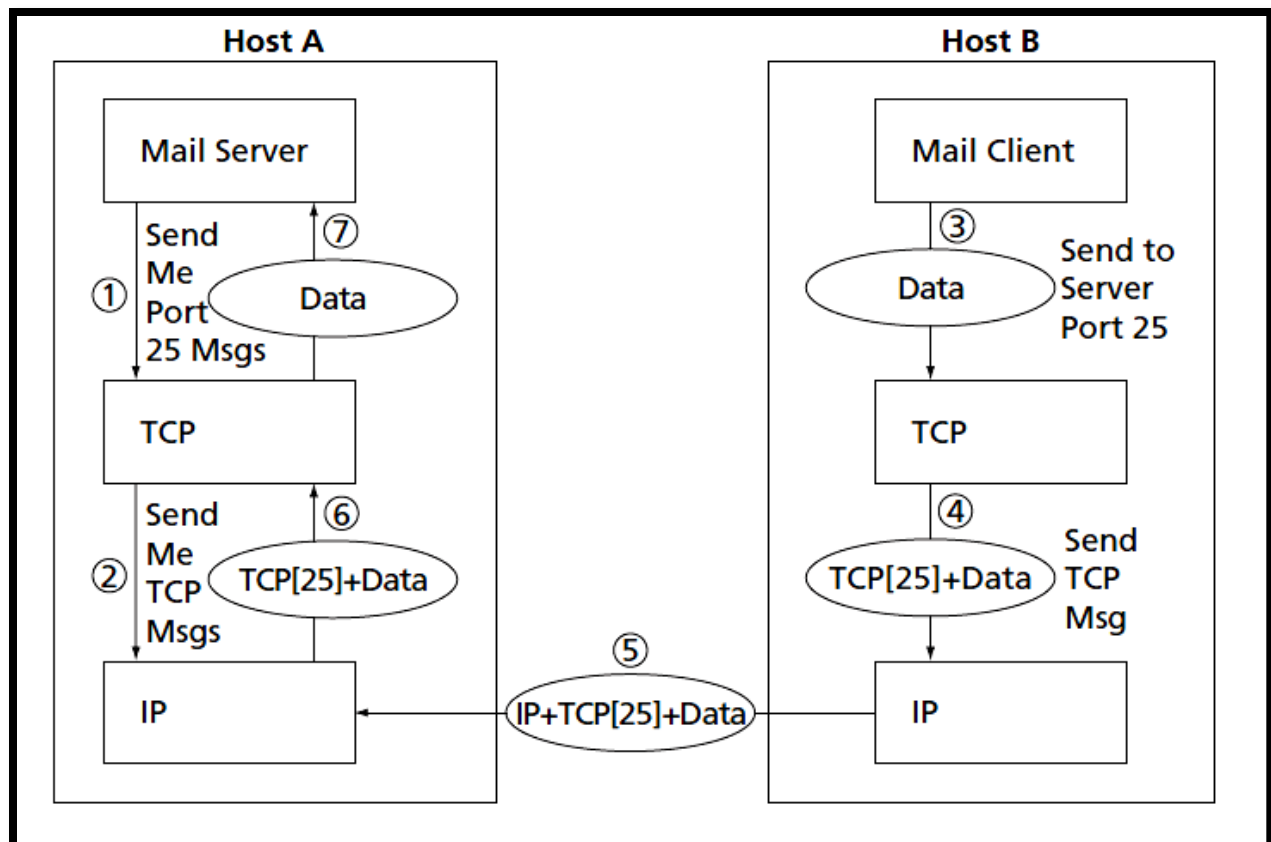
- ✓ TCP/IP is fundamental to the definition of the Internet .
- ✓ TCP and IP are actually two different protocols. The reason that they are often treated as one is that the bulk of the services we associate with the Internet—e-mail, Web browsing, file downloads, accessing remote databases—are built on top of both the TCP and IP protocols.
- ✓ But in reality, only one of these protocols—IP, the Internet Protocol—is fundamental to the definition of the Internet.
- ✓ A key element of IP is the **IP address**, which is simply a 32-bit number. At any given moment, each device on the Internet has one or more IP addresses associated with it.
- ✓ IP addresses are normally written as a sequence of four decimal numbers separated by periods (called “dots”), as in 192.0.34.166. Each decimal number represents one byte of the IP address.
- ✓ The function of IP software is to transfer data from one computer (the source) to another computer (the destination). When an application on the source computer wants to send information to a destination, the application calls IP software on the source machine and provides it with data to be transferred along with an IP address for each of the source and destination computers.
- ✓ The IP software running on the source creates a packet, which is a sequence of bits representing the data to be transferred along with the source and destination IP addresses and some other header information, such as the length of the data.
- ✓ If the destination computer is on the same local network as the source, then the IP software will send the packet to the destination directly via this network.
- ✓ If the destination is on another network, the IP software will send the packet to a **gateway**, which is a device that is connected to the source computer's network as well as to at least one other network.
- ✓ The gateway will select a computer on one of the other networks to which it is attached

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and send the packet on to that computer.

- ✓ This process will continue, with the packet going through perhaps a dozen or more *hops*, until the packet reaches the destination computer.
- ✓ IP software on that computer will receive the packet and pass its data up to an application that is waiting for the data.
- ✓ The sequence of computers that a packet travels through from source to destination is known as its **route**.
- ✓ ***How does each computer choose the next computer in the route for a packet?***  
A separate protocol (the current standard is BGP-4, the Border Gateway Protocol) is used to pass network connectivity information between gateways so that each can choose a good next hop for each packet it receives.
- ✓ **TCP, the Transmission Control Protocol**, is a higher-level protocol that extends IP to provide additional functionality, including reliable communication based on the concept of a connection.
- ✓ A connection is established between TCP software running on two machines by one of the machines (let's call it A) sending a connection-request message via IP to the other (B).
- ✓ The IP message contains a message conforming to the TCP protocol and representing a TCP connection request. If the connection is accepted by B, then B returns a message to A requesting a connection in the other direction .



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- ✓ If A responds affirmatively, then the connection is established. Notice that this means that A and B can both send messages to one another at the same time; this is known as ***full duplex communication***.
- ✓ Once a connection has been established, TCP provides reliable data transmission by demanding an ***acknowledgment*** for each packet it sends via IP.
- ✓ Another important feature that TCP adds to IP is the concept of a ***port***. The port concept allows TCP to be used to communicate with many different applications on a machine.
- ✓ TCP and IP provide many other functions, such as splitting long messages into shorter ones for transport over the Internet and transparently reassembling them on the receiving side.

UDP, DNS, and Domain Names :

- **UDP (User Datagram Protocol)** is an alternative protocol to TCP that also builds on IP.
- The main feature that UDP adds to IP is the port concept that we have just seen in TCP. However, it does not provide the two-way connection or guaranteed delivery of TCP. Its advantage over TCP is speed for simple tasks.
- One Internet application that is often run using UDP rather than TCP is the **Domain Name Service (DNS)**.
- While every device on the Internet has an IP address such as 192.0.34.166, humans generally find it easier to refer to machines by names, such as [www.example.org](http://www.example.org).
- DNS provides a mechanism for mapping back and forth between IP addresses and host names.
- UDP is sometimes referred to as a lightweight communication protocol and TCP as a ***heavyweight protocol***, at least in comparison with UDP.
- In general, the terms ***lightweight*** and ***heavyweight*** in computer science are used to describe alternative software solutions to some problem, with the lightweight solution having less functionality but also less overhead.
- Internet host names consist of a sequence of labels separated by dots. The final label in a host name is a top-level domain.
- There are two standard types of top-level domain: generic (such as .com, .edu, .org, and .biz) and country-code (such as .de, .il, and .mx).
- The top-level domain names are assigned by the Internet Corporation for Assigned Names and Numbers (ICANN), a private nonprofit organization formed to take over technical Internet functions that were originally funded by the U.S. government.
- Each top-level domain is divided into sub domains (second-level domains), which may in turn be further divided, and so on. The assignment of second-level domains within each top-level domain is performed (for a fee) by a registry operator selected by ICANN.
- The owner of a second-level domain can then further divide that domain into subdomains, and so on. Ultimately, the subdomains of a domain are individual computers. Such a subdomain, consisting of a local host name followed by a domain name (typically consisting of at least two labels) is sometimes called a fully qualified domain name for the computer.

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For example, ***www.example.org*** is a fully qualified domain name for a host with local name **www** that belongs to the **example** second-level domain of the **org** top-level domain.

Higher-Level Protocols :

- A variety of *higher-level protocols* are used to communicate once a TCP connection has been established. SMTP and FTP, mentioned earlier, are two examples of widely used higher-level protocols that are used to communicate over TCP connections.
- SMTP supports transfer of e-mail between different e-mail servers, while FTP is used for transferring files between machines. Another higher-level TCP protocol,
- Telnet, is used to execute commands typed into one computer on a remote computer. As we will see, Telnet can also be used to communicate directly (via keyboard entries) with some TCP-based applications.
- The primary TCP-based protocol used for communication between web servers and browsers is called the Hypertext Transport Protocol (HTTP).
- Just as IP is a key component in the definition of the Internet, HTTP is a key component in the definition of the World Wide Web.

**1.3 The world wide web :**

- Public sharing of information has been a part of the Internet since its early days.
- For example, the Usenet newsgroup service began in 1979 and provided a means of “posting” information that could be read by users on other systems with the appropriate software often shared by running an FTP server application that allowed any user to transfer the files from their origin machine to the user’s machine.
- The first Internet chat software in widespread use, Internet Relay Chat (IRC), provided both public and private chat facilities.
- The World Wide Web also was developed in the early 1990s and for a while was just one among several Internet information management technologies .

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- An Internet-connected computer that wishes to provide information to other Internet systems must run server software, and a system that wishes to access the information provided by servers must run client software .
- The server and client applications communicate over the Internet by following a communication protocol built on top of TCP/IP . The protocol used by the Web, as just noted, is the Hypertext Transport Protocol, HTTP.
- This generic nature of HTTP gives it the advantage of somewhat more flexibility than is present in the protocols used by WAIS and Gopher.
- Most web pages are written using the Hypertext Markup Language, HTML, which along with HTTP is a fundamental web technology. HTML pages can contain the familiar web links (technically called hyperlinks) to other documents on the Web.
- HTML also provide extensive page layout facilities, including support for inline graphics, which (as you might guess) has added significantly to the commercial appeal of the Web.
- The World Wide Web, then, can be defined in much the same way as the Internet. While the Internet can be thought of as the collection of machines that are globally connected via IP, the World Wide Web can be informally defined as the collection of machines (web servers) on the Internet that provide information via HTTP, and particularly those that provide HTML documents.

#### **1.4 HTTP**

- HTTP stands for **HyperText Transfer Protocol**.
- It is a protocol used to access the data on the World Wide Web (www).
- The HTTP protocol can be used to transfer the data in the form of plain text, hypertext, audio, video, and so on.
- This protocol is known as HyperText Transfer Protocol because of its efficiency that allows us to use in a hypertext environment where there are rapid jumps from one document to another document.
- HTTP is similar to the FTP as it also transfers the files from one host to another host. But, HTTP is simpler than FTP as HTTP uses only one connection, i.e., no control connection to transfer the files.
- HTTP is used to carry the data in the form of MIME-like format.

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- HTTP is similar to SMTP as the data is transferred between client and server. The HTTP differs from the SMTP in the way the messages are sent from the client to the server and from server to the client. SMTP messages are stored and forwarded while HTTP messages are delivered immediately.

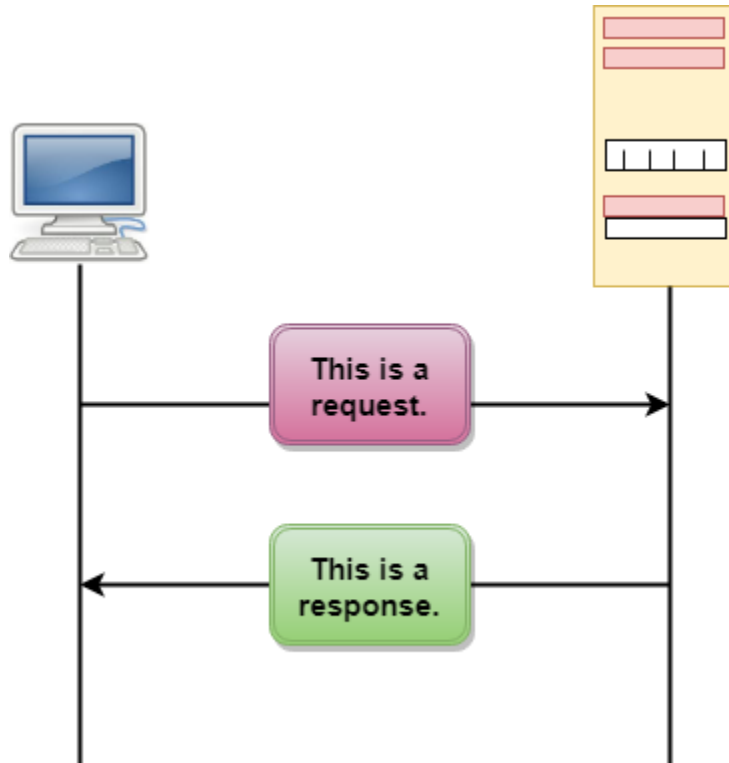
**Features of HTTP:**

- **Connectionless protocol:** HTTP is a connectionless protocol. HTTP client initiates a request and waits for a response from the server. When the server receives the request, the server processes the request and sends back the response to the HTTP client after which the client disconnects the connection. The connection between client and server exist only during the current request and response time only.
- **Media independent:** HTTP protocol is a media independent as data can be sent as long as both the client and server know how to handle the data content. It is required for both the client and server to specify the content type in MIME-type header.
- **Stateless:** HTTP is a stateless protocol as both the client and server know each other only during the current request. Due to this nature of the protocol, both the client and server do not retain the information between various requests of the web pages.



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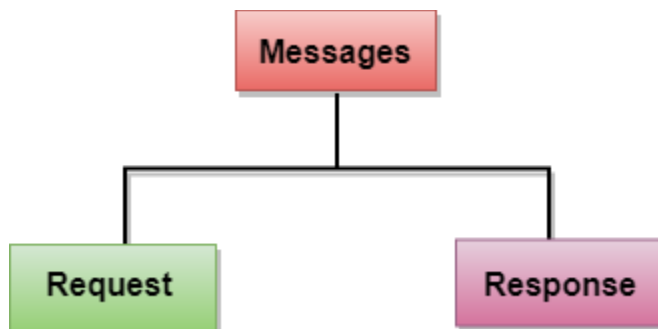
### HTTP Transactions



The above figure shows the HTTP transaction between client and server. The client initiates a transaction by sending a request message to the server. The server replies to the request message by sending a response message.

### Messages

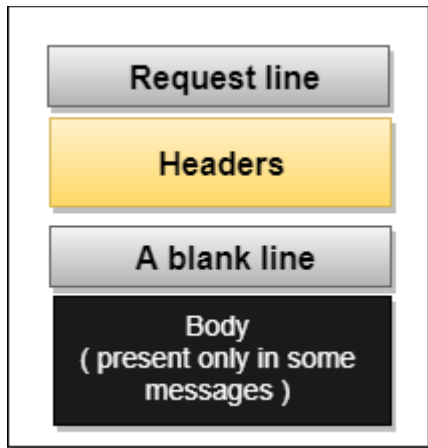
HTTP messages are of two types: request and response. Both the message types follow the same message format.



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**Request Message:** The request message is sent by the client that consists of a request line, headers, and sometimes a body.



**HTTP Request:**

**Request Line:** The first line of an HTTP request contains the request method, the URL of the requested resource, and the HTTP version being used. For example:

***GET /index.html HTTP/1.1***

*HTTP defines several request methods or verbs, each indicating the desired action to be performed on the specified resource. The most common methods include:*

***GET: Retrieves data from the server.***

***POST: Submits data to the server to be processed.***

***PUT: Updates a resource on the server.***

***DELETE: Deletes a resource on the server.***

***HEAD: Retrieves only the headers of a response without the message body.***

***OPTIONS: Retrieves the communication options available for the target resource.***

**Request Headers:** Following the request line, there may be zero or more request headers. These headers provide additional information about the request, such as the user agent, content type, cookies, and more. Example headers include:

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**Host:** *www.example.com*

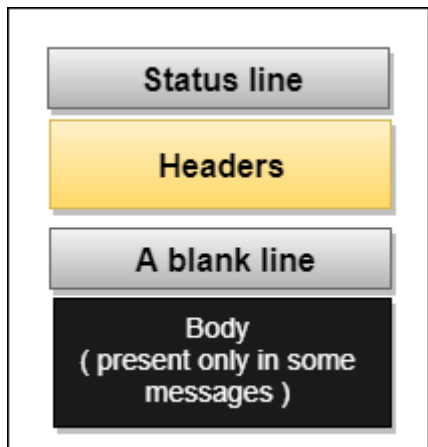
**User-Agent:** *Mozilla/5.0 (Windows NT 10.0; Win64; x64) AppleWebKit/537.36 (KHTML, like Gecko) Chrome/96.0.4664.110 Safari/537.36*

**Accept:**

*text/html,application/xhtml+xml,application/xml;q=0.9,image/avif,image/webp,image/apng,\*/\*;q=0.8,application/signed-exchange;v=b3;q=0.9*

**Request Body:** For some HTTP methods (such as POST and PUT), the request may include a message body containing data to be sent to the server. This data could be form data, JSON, XML, or other formats.

**Response Message:** The response message is sent by the server to the client that consists of a status line, headers, and sometimes a body.



**HTTP Response:**

**Status Line:** The first line of an HTTP response contains the HTTP version being used, a status code, and a brief textual description of the status code. For example:

**HTTP/1.1 200 OK**

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- HTTP responses include status codes indicating the outcome of the request. These codes are grouped into five categories:
  1. 1xx: Informational responses
  2. 2xx: Success responses (e.g., 200 OK)
  3. 3xx: Redirection responses
  4. 4xx: Client error responses (e.g., 404 Not Found)
  5. 5xx: Server error responses (e.g., 500 Internal Server Error)

**Response Headers:** Following the status line, there may be zero or more response headers. These headers provide additional information about the response, such as the content type, content length, server information, and more. Example headers include:

**Content-Type:** text/html; charset=UTF-8

**Content-Length:** 1234

**Server:** Apache

**Response Body:** After the headers, the response may include a message body containing the requested resource or an error message. The format and content of the body depend on the requested resource and the server's response. For example, for a request to retrieve an HTML page, the body would contain the HTML content of the page.

**Example:**

**Request:**

GET /index.html HTTP/1.1

Host: www.example.com

User-Agent: Mozilla/5.0 (Windows NT 10.0; Win64; x64) AppleWebKit/537.36 (KHTML, like Gecko) Chrome/96.0.4664.110 Safari/537.36

Accept:

text/html,application/xhtml+xml,application/xml;q=0.9,image/avif,image/webp,image/apng,\*/\*;q=0.8,application/signed-exchange;v=b3;q=0.9

Response:

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HTTP/1.1 200 OK

Content-Type: text/html; charset=UTF-8

Content-Length: 1234

Server: Apache

<!DOCTYPE html>

<html>

<head>

    <title>Example Page</title>

</head>

<body>

    <h1>Hello, World!</h1>

    <p>This is an example page.</p>

</body>

</html>

**Uniform Resource Locator (URL)**

- A client that wants to access the document in an internet needs an address and to facilitate the access of documents, the HTTP uses the concept of Uniform Resource Locator (URL).
- The Uniform Resource Locator (URL) is a standard way of specifying any kind of information on the internet.
- The URL defines four parts: method, host computer, port, and path.

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**ADVERTISEMENT**

- **Method:** The method is the protocol used to retrieve the document from a server. For example, HTTP.
- **Host:** The host is the computer where the information is stored, and the computer is given an alias name. Web pages are mainly stored in the computers and the computers are given an alias name that begins with the characters "www". This field is not mandatory.
- **Port:** The URL can also contain the port number of the server, but it's an optional field. If the port number is included, then it must come between the host and path and it should be separated from the host by a colon.
- **Path:** Path is the pathname of the file where the information is stored. The path itself contain slashes that separate the directories from the subdirectories and files.

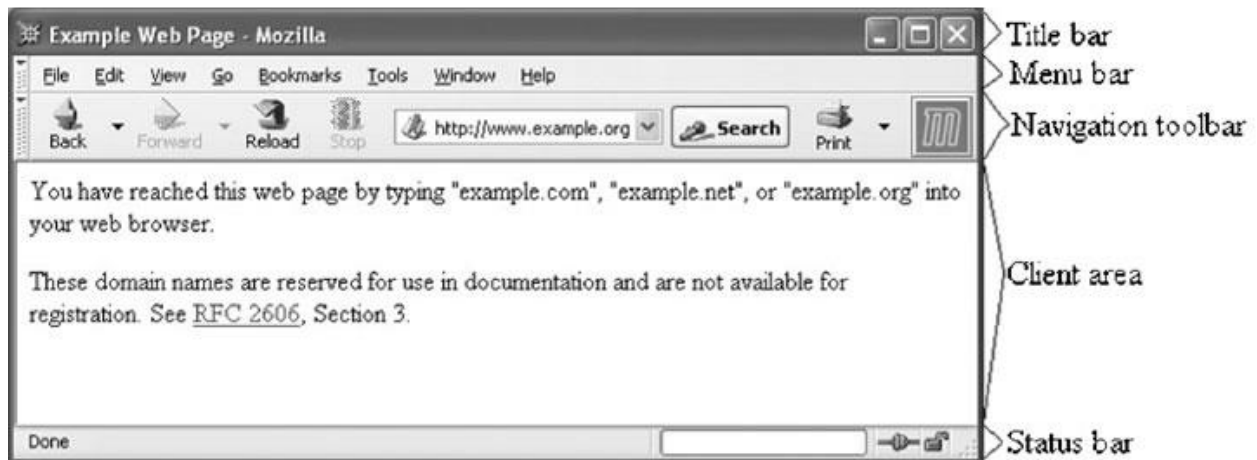
## **1.6.Web Clients**

- A *web client* is software that accesses a web server by sending an HTTP request message and processing the resulting HTTP response. Any web client that is designed to directly support user access to web servers is known as a *user agent*.
- Some web clients are not designed to be used directly by humans at all. For example, software *robots* are often used to automatically crawl the Web and download information for use by search engines.
- Early web browsers generally either were text-based or ran on specialized platforms, such as computers from Sun Microsystems or the now-defunct NeXT Systems.
- The Mosaic<sup>TM</sup> browser, developed at the National Center for Supercomputer Applications (NCSA) in 1993.
- Microsoft soon followed with the Microsoft R \_ Internet Explorer (IE) browser, which was originally based on Mosaic.

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### 1.6.1 Basic Browser Functions

- The window of a typical modern browser is split into several rectangular regions, most of which are known as *bars*.
- The primary region is the *client area*, which displays a document. For many documents, the *title bar* displays a title assigned by the document author to the document currently displayed within the client area. The title bar also displays the browser name as well as standard window-management controls. The *menu bar* contains a set of dropdown menus, much like most other applications that incorporate a graphical user interface (GUI).
- The browser's *Navigation toolbar* contains standard push-button controls that allow the user to return to a previously viewed web page (Back), reverse the effect of pressing Back (Forward), ask the server for an updated version of the page currently viewed (Reload), halt page downloading currently in progress (Stop), and print the client area of the window (Print).
- Clicking the small down-arrow to the right of some buttons produces a menu allowing users to override the default behavior of the associated button.
- The Navigation toolbar also contains a text box, known as the *Location bar*, where a user can enter a URL and press the Enter key in order to request the browser to display the document located at the specified URL. Clicking the Search button instead of pressing Enter causes the information entered in the text box to be sent to a search engine. Clicking the down-arrow at the right side of the Location bar produces a dropdown menu of recently visited URLs that can be visited again with a single click.



- The *status bar* displays messages and icons related to the status of the browser.

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A primary task of any browser is to make HTTP requests on behalf of the browser user. If a user types an http-scheme URL in Mozilla's Location bar, for example, the browser must perform a number of tasks:

1. Reformat the URL entered as a valid HTTP request message.
2. If the server is specified using a host name (rather than an IP address), use DNS to convert this name to the appropriate IP address.
3. Establish a TCP connection using the IP address of the specified web server.
4. Send the HTTP request over the TCP connection and wait for the server's response.
5. Display the document contained in the response. If the document is not a plain-text document but instead is written in a language such as HTML, this involves *rendering* the document: positioning text and graphics appropriately within the browser window, creating table borders, using appropriate fonts and colors, etc.

## **1.7 Web Servers**

### **1.7.1 Server Features**

The primary feature of every web server is to accept HTTP requests from web clients and return an appropriate resource (if available) in the HTTP response. Even this basic functionality involves a number of steps

1. The server calls on TCP software and waits for connection requests to one or more ports.
2. When a connection request is received, the server dedicates a "subtask" to handling this connection.
3. The subtask establishes the TCP connection and receives an HTTP request.
4. The subtask examines the Host header field of the request to determine which "virtual host" should receive this request and invokes software for this host.
5. The virtual host software maps the Request-URI field of the HTTP request start line to a resource on the server.
6. If the resource is a file, the host software determines the MIME type of the file (usually by a mapping from the file-name extension portion of the Request-URI), and creates an HTTP response that contains the file in the body of the response message.
7. If the resource is a program, the host software runs the program, providing it with information from the request and returning the output from the program as the body of an HTTP response message.
8. The server normally logs information about the request and response—such as the IP address of the requester and the status code of the response—in a plain-text file.
9. If the TCP connection is kept alive, the server subtask continues to monitor the connection until a certain length of time has elapsed, the client sends another request, or the client initiates a connection close.



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- All modern servers can concurrently process multiple requests. It is as if multiple copies of the server were running simultaneously, each devoted to handling the requests received over a single TCP connection.
- The specifics of how this concurrency is actually implemented on a system may depend on many factors, including the number of processors available in the system, the programming language used, and programmer choices.
- The term *subtask* to refer to the concept of a single “copy” of the server software handling a single client connection.
- Another term that may need some explanation is *virtual host*. As noted earlier, every HTTP request must include a Host header field. The reason for this requirement is that multiple host names may all be mapped by the Internet DNS system to a single IP address.
- The reason for this requirement is that multiple host names may all be mapped by the Internet DNS system to a single IP address.

### **1.8.HTML 5:**

#### **What is HTML?**

- HTML stands for Hyper Text Markup Language
- HTML is the standard markup language for creating Web pages
- HTML describes the structure of a Web page
- HTML consists of a series of elements
- HTML elements tell the browser how to display the content
- HTML elements label pieces of content such as "this is a heading", "this is a paragraph", "this is a link", etc.

#### **Example**

```
<!DOCTYPE html>
<html>
<head>
<title>Page Title</title>
</head>
<body>

<h1>My First Heading</h1>
<p>My first paragraph.</p>

</body>
</html>
```

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### Example Explained

- The <!DOCTYPE html> declaration defines that this document is an HTML5 document
- The <html> element is the root element of an HTML page
- The <head> element contains meta information about the HTML page
- The <title> element specifies a title for the HTML page (which is shown in the browser's title bar or in the page's tab)
- The <body> element defines the document's body, and is a container for all the visible contents, such as headings, paragraphs, images, hyperlinks, tables, lists, etc.
- The <h1> element defines a large heading
- The <p> element defines a paragraph

### What is an HTML Element?

An HTML element is defined by a start tag, some content, and an end tag:

<tagname> Content goes here... </tagname>

The HTML **element** is everything from the start tag to the end tag:

<h1>My First Heading</h1>

<p>My first paragraph.</p>

### HTML Page Structure

Below is a visualization of an HTML page structure:

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```
<html>

<head>

  <title>Page title</title>

</head>

<body>

  <h1>This is a heading</h1>

  <p>This is a paragraph.</p>

  <p>This is another paragraph.</p>

</body>

</html>
```

## **HTML History**

Since the early days of the World Wide Web, there have been many versions of HTML:

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Year	Version
1989	Tim Berners-Lee invented www
1991	Tim Berners-Lee invented HTML
1993	Dave Raggett drafted HTML+
1995	HTML Working Group defined HTML 2.0
1997	W3C Recommendation: HTML 3.2
1999	W3C Recommendation: HTML 4.01
2000	W3C Recommendation: XHTML 1.0
2008	WHATWG HTML5 First Public Draft
2012	<a href="#"><u>WHATWG HTML5 Living Standard</u></a>
2014	<a href="#"><u>W3C Recommendation: HTML5</u></a>
2016	W3C Candidate Recommendation: HTML 5.1
2017	<a href="#"><u>W3C Recommendation: HTML5.1 2nd Edition</u></a>
2017	<a href="#"><u>W3C Recommendation: HTML5.2</u></a>

Some Fundamental HTML Elements:

### **HTML Headings**

- HTML headings are defined with the <h1> to <h6> tags.
- <h1> defines the most important heading. <h6> defines the least important heading.

#### **Example:**

<!DOCTYPE html>

<html>

<body>

<h1>Heading 1</h1>

<h2>Heading 2</h2>

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<h3>Heading 3</h3>

<h4>Heading 4</h4>

<h5>Heading 5</h5>

<h6>Heading 6</h6>

</body>

</html>

**Output:**

Heading 1

Heading 2

Heading 3

*Heading 4*

Heading 5

Heading 6

**HTML Paragraphs**

- The HTML <p> element defines a paragraph.
- A paragraph always starts on a new line, and browsers automatically add some white space (a margin) before and after a paragraph.

**Example:**

<!DOCTYPE html>

<html>

<body>

<p>This is a paragraph.</p>

<p>This is a paragraph.</p>

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<p>This is a paragraph.</p>

</body>

</html>

**Output:**

This is a paragraph.

This is a paragraph.

This is a paragraph.

**HTML Links - Syntax**

- The HTML <a> tag defines a hyperlink. It has the following syntax:
- <a href="*url*">*link text*</a>
- The most important attribute of the <a> element is the href attribute, which indicates the link's destination.
- The *link text* is the part that will be visible to the reader.
- Clicking on the link text, will send the reader to the specified URL address.

**Example**

<a href="https://www.w3schools.com/">Visit W3Schools.com!</a>

**HTML Links - The target Attribute**

By default, the linked page will be displayed in the current browser window. To change this, you must specify another target for the link.

The target attribute specifies where to open the linked document.

The target attribute can have one of the following values:

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- `_self` - Default. Opens the document in the same window/tab as it was clicked
- `_blank` - Opens the document in a new window or tab
- `_parent` - Opens the document in the parent frame
- `_top` - Opens the document in the full body of the window

**HTML Images Syntax**

The HTML `<img>` tag is used to embed an image in a web page.

Images are not technically inserted into a web page; images are linked to web pages. The `<img>` tag creates a holding space for the referenced image.

The `<img>` tag is empty, it contains attributes only, and does not have a closing tag.

The `<img>` tag has two required attributes:

- `src` - Specifies the path to the image
- `alt` - Specifies an alternate text for the image

**Syntax**

```

```

**Example:**

```
<!DOCTYPE html>
```

```
<html>
```

```
<body>
```

```
<h2>Alternative text</h2>
```

```
<p>The alt attribute should reflect the image content, so users who cannot see the image get an understanding of what the image contains:</p>
```

```

```

```
</body>
```

```
</html>
```

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**Output:**

## **Alternative text**

The alt attribute should reflect the image content, so users who cannot see the image get an understanding of what the image contains:



## **HTML Favicon**

- A favicon is a small image displayed next to the page title in the browser tab.
- 

### **HTML favicon**

A **favicon** is a small file containing the one or more icons which are used to represent the website or a blog. It is also known as a tab icon, website icon, URL icon, or a bookmark icon.

This icon is actually displayed on the address bar, browser's tab, browser history, bookmark bar, etc. The image of a favicon is in **.ico** file format. There are various file formats, but **.ico** format is supported by all the browsers.



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### **How to Create a Favicon**

Following are the steps for creating the favicon:

1. Click on the following URL, to create the favicon: <https://www.favicon.cc/>
2. Once the favicon is successfully created, we can download the favicon by clicking on the **download favicon** option.
3. 3After the downloading, a favicon with the name **favicon.ico** is available in the file system drive.

### **How to insert the Favicon in HTML file**

1. Following are the steps for inserting the **favicon.ico** image in the **HTML** file:

Open the HTML file. Then use the following syntax to insert the favicon in the HTML file.

1. `<link rel="shortcut icon" href="favicon.ico" type="image/x-icon">`
2. We have to use the above syntax in the tag of our html file. Then save the file.
3. Now. Open the HTML file in any browser. We can see the icon on the web page.

### **Example**

```
<html>
<head>
<link rel="shortcut icon" href="favicon.ico" type="image/x-icon">
</head>
<title> Example of favicon</title>
<body>
<br>
<br>
<p align="center">

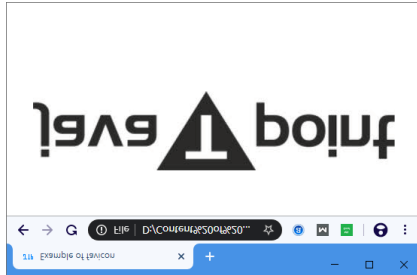
</p>
```

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**</body>**

**</html>**

**Output:**



### **HTML Formatting Elements**

- Formatting elements were designed to display special types of text:
  1. <b> - Bold text
  2. <strong> - Important text
  3. <i> - Italic text
  4. <em> - Emphasized text
  5. <mark> - Marked text
  6. <small> - Smaller text
  7. <del> - Deleted text
  8. <ins> - Inserted text
  9. <sub> - Subscript text
  10. <sup> - Superscript text

### **HTML Comment Tag**

- You can add comments to your HTML source by using the following syntax:

**<!-- Write your comments here -->**

### **The <div> Element**

- The <div> element is by default a block element, meaning that it takes all available width, and comes with line breaks before and after.

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The <div> element is used as a container for other HTML elements.

- Example

A <div> element takes up all available width:

Lorem Ipsum <div>I am a div</div> dolor sit amet.

Result

Lorem Ipsum

I am a div

dolor sit amet.

### **HTML Lists**

HTML Lists are used to specify lists of information. All lists may contain one or more list elements. There are three different types of HTML lists:

1. Ordered List or Numbered List (ol)
2. Unordered List or Bulleted List (ul)
3. Description List or Definition List (dl)

### **HTML Ordered List or Numbered List**

In the ordered HTML lists, all the list items are marked with numbers by default. It is known as numbered list also. The ordered list starts with <ol> tag and the list items start with <li> tag.

We can use ordered list to represent items either in numerical order format or alphabetical order format, or any format where an order is emphasized. There can be different types of numbered list:

- Numeric Number (1, 2, 3)
- Capital Roman Number (I II III)
- Small Roman Number (i ii iii)
- Capital Alphabet (A B C)

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- Small Alphabet (a b c)

To represent different ordered lists, there are 5 types of attributes in <ol> tag.

Type	Description
Type "1"	This is the default type. In this type, the list items are numbered with numbers.
Type "I"	In this type, the list items are numbered with upper case roman numbers.
Type "i"	In this type, the list items are numbered with lower case roman numbers.
Type "A"	In this type, the list items are numbered with upper case letters.
Type "a"	In this type, the list items are numbered with lower case letters.

1. <ol>
2. <li>Aries</li>
3. <li>Bingo</li>
4. <li>Leo</li>
5. <li>Oracle</li>
6. </ol>

**Test it Now**

**Output:**

1. Aries
2. Bingo
3. Leo
4. Oracle

**start attribute**

The start attribute is used with ol tag to specify from where to start the list items.

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**<ol type="1" start="5">** : It will show numeric values starting with "5".

**<ol type="A" start="5">** : It will show capital alphabets starting with "E".

**<ol type="a" start="5">** : It will show lower case alphabets starting with "e".

**<ol type="I" start="5">** : It will show Roman upper case value starting with "V".

**reversed Attribute:**

This is a Boolean attribute of HTML <ol> tag, and it is new in HTML5 version. If you use the reversed attribute with tag then it will numbered the list in descending order (7, 6, 5, 4.....1).

**HTML Unordered List or Bulleted List**

In HTML Unordered list, all the list items are marked with bullets. It is also known as bulleted list also. The Unordered list starts with <ul> tag and list items start with the <li> tag.

1. <ul>
2. <li>Aries</li>
3. <li>Bingo</li>
4. <li>Leo</li>
5. <li>Oracle</li>
6. </ul>

**Test it Now**

Output:

- Aries
- Bingo
- Leo
- Oracle

The HTML ul tag is used for the unordered list. There can be 4 types of bulleted list:

- disc
- circle

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- square
- none

To represent different ordered lists, there are 4 types of attributes in <ul> tag.

Type	Description
Type "disc"	This is the default style. In this style, the list items are marked with bullets.
Type "circle"	In this style, the list items are marked with circles.
Type "square"	In this style, the list items are marked with squares.
Type "none"	In this style, the list items are not marked .

### **HTML Description List or Definition List**

HTML Description list is also a list style which is supported by HTML and XHTML. It is also known as definition list where entries are listed like a dictionary or encyclopedia.

The definition list is very appropriate when you want to present glossary, list of terms or other name-value list.

The HTML definition list contains following three tags:

1. **<dl> tag** defines the start of the list.
2. **<dt> tag** defines a term.
3. **<dd> tag** defines the term definition (description).

1. **<dl>**
2. **<dt>Aries</dt>**
3. **<dd>-One of the 12 horoscope sign.</dd>**
4. **<dt>Bingo</dt>**
5. **<dd>-One of my evening snacks</dd>**
6. **<dt>Leo</dt>**

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7. **<dd>**-It is also an one of the 12 horoscope sign.**</dd>**
8. **<dt>**Oracle**</dt>**
9. **<dd>**-It is a multinational technology corporation.**</dd>**
10. **</dl>**

Output:

Aries

-One of the 12 horoscope sign.

Bingo

-One of my evening snacks

Leo

-It is also an one of the 12 horoscope sign.

Oracle

-It is a multinational technology corporation.

### **HTML Nested List**

A list within another list is termed as nested list. If you want a bullet list inside a numbered list then such type of list will called as nested list.

**Code:**

1. **<!DOCTYPE html>**
2. **<html>**
3. **<head>**
4. **<title>**Nested list**</title>**
5. **</head>**
6. **<body>**
7. **<p>**List of Indian States with thier capital**</p>**
8. **<ol>**
9. **<li>**Delhi

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```
10.    <ul>
11.        <li>NewDelhi</li>
12.    </ul>
13. </li>
14. <li>Haryana
15.    <ul>
16.        <li>Chandigarh</li>
17.    </ul>
18. </li>
19. <li>Gujarat
20.    <ul>
21.        <li>Gandhinagar</li>
22.    </ul>
23. </li>
24. <li>Rajasthan
25.    <ul>
26.        <li>Jaipur</li>
27.    </ul>
28. </li>
29. <li>Maharashtra
30.    <ul>
31.        <li>Mumbai</li>
32.    </ul>
33. </li>
34. <li>Uttarpradesh
35.    <ul>
36.        <li>Lucknow</li></ul>
37. </li>
38. </ol>
39. </body>
40. </html>
```



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**Output:**

## Welcome To javaTpoint Learning

### List of available courses

- Data Structures & Algorithm
- Web Technology
- Aptitude & Logical Reasoning
- Programming Languages

### HTML Table

- **HTML table tag** is used to display data in tabular form (row \* column). There can be many columns in a row.
- We can create a table to display data in tabular form, using <table> element, with the help of <tr> , <td>, and <th> elements.
- In Each table, table row is defined by <tr> tag, table header is defined by <th>, and table data is defined by <td> tags.
- HTML tables are used to manage the layout of the page e.g. header section, navigation bar, body content, footer section etc. But it is recommended to use div tag over table to manage the layout of the page .
- \_\_\_\_\_

### HTML Table Tags

Tag	Description
<table>	It defines a table.
<tr>	It defines a row in a table.

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<th>	It defines a header cell in a table.
<td>	It defines a cell in a table.
<caption>	It defines the table caption.
<colgroup>	It specifies a group of one or more columns in a table for formatting.
<col>	It is used with <colgroup> element to specify column properties for each column.
<tbody>	It is used to group the body content in a table.
<thead>	It is used to group the header content in a table.
<tfooter>	It is used to group the footer content in a table.

### **How To Add a Border**

To add a border, use the CSS border property on table, th, and td elements:


### **Example**

```
table, th, td {  
  border: 1px solid black;  
}
```

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### **HTML Table Width**

To set the width of a table, add the style attribute to the <table> element:

### **HTML Table Headers**

Table headers are defined with th elements. Each th element represents a table cell.

Example:

```
<!DOCTYPE html>
```

```
<html>
```

```
<style>
```

```
table, th, td {
```

```
    border: 1px solid black;
```

```
}
```

```
</style>
```

```
<body>
```

```
<h2>A basic HTML table</h2>
```

```
<table style="width:100%">
```

```
<tr>
```

```
<th>Company</th>
```

```
<th>Contact</th>
```

```
<th>Country</th>
```

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</tr>

<tr>

<td>Alfreds Futterkiste</td>

<td>Maria Anders</td>

<td>Germany</td>

</tr>

<tr>

<td>Centro comercial Moctezuma</td>

<td>Francisco Chang</td>

<td>Mexico</td>

</tr>

</table>

<p>To understand the example better, we have added borders to the table.</p>

</body>

</html>

**Output:**

## A basic HTML table

Company	Contact	Country
Alfreds Futterkiste	Maria Anders	Germany
Centro comercial Moctezuma	Francisco Chang	Mexico

To understand the example better, we have added borders to the table.

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**HTML Table Colspan & Rowspan**

HTML tables can have cells that span over multiple rows and/or columns.

<b>NAME</b>		

<b>APRIL</b>		

<b>2022</b>		
<b>FIESTA</b>		

**HTML Table - Colspan**

To make a cell span over multiple columns, use the colspan attribute:

**Example:**

```
<!DOCTYPE html>
```

```
<html>
```

```
<head>
```

```
<style>
```

```
table, th, td {
```

```
    border: 1px solid black;
```

```
    border-collapse: collapse;
```

```
}
```

```
</style>
```

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</head>

<body>

<h2>Cell that spans two columns</h2>

<p>To make a cell span more than one column, use the colspan attribute.</p>

<table style="width:100%">

<tr>

<th colspan="2">Name</th>

<th>Age</th>

</tr>

<tr>

<td>Jill</td>

<td>Smith</td>

<td>43</td>

</tr>

<tr>

<td>Eve</td>

<td>Jackson</td>

<td>57</td>

</tr>

</table>

</body>

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</html>

**Output:**

## Cell that spans two columns

To make a cell span more than one column, use the colspan attribute.

Name		Age
Bill	Smith	43
Eve	Jackson	57

## HTML Table - Rowspan

To make a cell span over multiple rows, use the rowspan attribute

**Example:**

```
<!DOCTYPE html>
```

```
<html>
```

```
<head>
```

```
<style>
```

```
table, th, td {
```

```
    border: 1px solid black;
```

```
    border-collapse: collapse;
```

```
}
```

```
</style>
```

```
</head>
```

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<body>

<h2>Cell that spans two rows</h2>

<p>To make a cell span more than one row, use the rowspan attribute.</p>

<table style="width:100%">

<tr>

<th>Name</th>

<td>Jill</td>

</tr>

<tr>

<th rowspan="2">Phone</th>

<td>555-1234</td>

</tr>

<tr>

<td>555-8745</td>

</tr>

</table>

</body>

</html>



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## Cell that spans two rows

To make a cell span more than one row, use the rowspan attribute.

<b>Name</b>	Jill
<b>Phone</b>	555-1234
	555-8745

## HTML Drag and Drop

- **HTML Drag and Drop (DnD)** is a feature of HTML5. It is a powerful user interface concept which *is used to copy, reorder and delete items with the help of mouse*. You can hold the mouse button down over an element and drag it to another location. If you want to drop the element there, just release the mouse button.
- If you want to achieve the Drag and Drop functionality in traditional HTML4, you must either have to use complex JavaScript programming or other JavaScript frameworks like jQuery etc.

## Events for Drag and Drop feature

Event	Description
Drag	It fires every time when the mouse is moved while the object is being dragged.
Dragstart	It is a very initial stage. It fires when the user starts dragging object.
Dragenter	It fires when the user moves his/her mouse cursor over the target element.
Dragover	This event is fired when the mouse moves over an element.
Dragleave	This event is fired when the mouse leaves an element.
Drop	Drop It fires at the end of the drag operation.

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Dragend	It fires when user releases the mouse button to complete the drag operation.
---------	--

**HTML5 Control Elements:**

**HTML Form**

- An HTML form is a section of a document which contains controls such as text fields, password fields, checkboxes, radio buttons, submit button, menus etc.
- An HTML form facilitates the user to enter data that is to be sent to the server for processing such as name, email address, password, phone number, etc. .

**Why use HTML Form**

- HTML forms are required if you want to collect some data from of the site visitor.
- For example: If a user want to purchase some items on internet, he/she must fill the form such as shipping address and credit/debit card details so that item can be sent to the given address.

**HTML Form Syntax**

`<form action="server url" method="get|post">`

`//input controls e.g. textfield, textarea, radiobutton, button`

`</form>`

**HTML Input Controls:**

**Text Input:**

`<label for="username">Username:</label>`

`<input type="text" id="username" name="username">`

**Password Input:**

`<label for="password">Password:</label>`

`<input type="password" id="password" name="password">`

**Checkbox:**

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<label for="subscribe">Subscribe to newsletter:</label>

<input type="checkbox" id="subscribe" name="subscribe" value="yes">

**Radio Buttons:**

<label>Gender:</label><br>

<input type="radio" id="male" name="gender" value="male">

<label for="male">Male</label><br>

<input type="radio" id="female" name="gender" value="female">

<label for="female">Female</label><br>

**Select Dropdown:**

<label for="country">Country:</label>

<select id="country" name="country">

    <option value="usa">USA</option>

    <option value="canada">Canada</option>

    <option value="uk">UK</option>

</select>

**Textarea:**

<label for="message">Message:</label><br>

<textarea id="message" name="message" rows="4" cols="50"></textarea>

**File Input:**

<label for="file">Upload File:</label>

<input type="file" id="file" name="file">

**Submit Button:**

<input type="submit" value="Submit">

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**Reset Button:**

```
<input type="reset" value="Reset">
```

**Button:**

```
<button type="button" onclick="alert('Hello!')">Click Me</button>
```

**HTML5 form elements:**

`<input type="color">`: Allows users to select a color from a color picker.

`<input type="date">`: Provides a date picker for selecting dates.

`<input type="datetime-local">`: Allows users to select a date and time (without time zone information) from a datetime picker.

`<input type="email">`: Validates that the input value is a properly formatted email address.

`<input type="number">`: Restricts input to numeric values and provides validation for numbers.

`<input type="range">`: Renders a slider control for selecting a value from a range.

`<input type="search">`: Renders a search input field with built-in search capabilities.

`<input type="tel">`: Validates that the input value is a properly formatted telephone number.

`<input type="time">`: Provides a time picker for selecting time values.

`<input type="url">`: Validates that the input value is a properly formatted URL.

`<input type="week">`: Allows users to select a week from a calendar picker.

`<input type="month">`: Allows users to select a month and year from a calendar picker.

`<datalist>`: Defines a list of predefined options for an `<input>` element. It provides autocomplete functionality based on the options specified in the list.

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`<keygen>`: Generates a key pair for forms to enable secure communication between the client and server.

`<output>`: Displays the result of a calculation or action performed by the user.

**Example:**

```
<!DOCTYPE html>
```

```
<html lang="en">
```

```
<head>
```

```
<meta charset="UTF-8">
```

```
<meta name="viewport" content="width=device-width, initial-scale=1.0">
```

```
<title>User Registration</title>
```

```
</head>
```

```
<body>
```

```
<h2>User Registration Form</h2>
```

```
<form action="/submit_registration" method="post">
```

```
<label for="username">Username:</label><br>
```

```
<input type="text" id="username" name="username" required><br>
```

```
<label for="password">Password:</label><br>
```

```
<input type="password" id="password" name="password" required><br>
```

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<label for="subscribe">Subscribe to newsletter:</label><br>

<input type="checkbox" id="subscribe" name="subscribe" value="yes"><br>

<label>Gender:</label><br>

<input type="radio" id="male" name="gender" value="male">

<label for="male">Male</label><br>

<input type="radio" id="female" name="gender" value="female">

<label for="female">Female</label><br>

<label for="country">Country:</label><br>

<select id="country" name="country">

<option value="usa">USA</option>

<option value="canada">Canada</option>

<option value="uk">UK</option>

</select><br>

<label for="message">Message:</label><br>

<textarea id="message" name="message" rows="4" cols="50"></textarea><br>

<input type="submit" value="Submit">

<input type="reset" value="Reset">

</form>

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</body>

</html>

### **HTML5 Semantics**

- In any language, it is essential to understand the meaning of words during communication. And if this is a computer communication then it becomes more critical. So HTML5 provides more semantic elements which make easy understanding of the code.
- Hence Semantics defines the meaning of words and phrases, i.e.
- Semantic elements= elements with a meaning. Semantic elements have a simple and clear meaning for both, the browser and the developer.
- For example:
- In HTML4 we have seen <div>, <span> etc. are which are non-semantic elements. They don't tell anything about its content.
- On the other hand, <form>, <table>, and <article> etc. are semantic elements because they clearly define their content.
- HTML5 semantic elements are supported by all major browsers.

### **Why to use semantic elements?**

- In HTML4, developers have to use their own id/class names to style elements: header, top, bottom, footer, menu, navigation, main, container, content, article, sidebar, topnav, etc.
- This is so difficult for search engines to identify the correct web page content. Now in HTML5 elements (<header> <footer> <nav> <section> <article>), this will become easier. It now allows data to be shared and reused across applications, enterprises, and communities."
- Semantic elements can increase the accessibility of your website, and also helps to create a better website structure.

### **Semantic Elements in HTML5**

Index	Semantic Tag	Description
1.	<article>	Defines an article

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2.	<aside>	Defines content aside from the page content
3.	<details>	Defines additional details that the user can view or hide
4.	<figcaption>	Defines a caption for a <figure> element
5.	<figure>	Specifies self-contained content, like illustrations, diagrams, photos, code listings, etc.
6.	<footer>	Defines a footer for a document or section
7.	<header>	Specifies a header for a document or section
8.	<main>	Specifies the main content of a document
9.	<mark>	Defines marked/highlighted text
10.	<nav>	Defines navigation links
11.	<section>	Defines a section in a document
12.	<summary>	Defines a visible heading for a <details> element
13.	<time>	Defines a date/time

**Some important semantic elements in HTML5**

**HTML5 <article> Element**

HTML <article> element defines article content within a document, page, application, or a website. It can be used to represent a forum post, a magazine, a newspaper article, or a big story.



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Example:

1. <article>
2.     <h2>Today's highlights</h2>
3.     <p>First story</p>
4.     <p>Second story</p>
5.     <p>Third story</p>
6. </article>

### **HTML5 <aside> Element**

The <aside> element represent the content which is indirectly giving information to the main content of the page. It is frequently represented as a sidebar.

Example:

1. <body>
2. <h2>My last year memories</h2>
3. <p>I have visited Paris with my friends last month. This was the memorable journey and i wish to go there again.</p>
4. <aside>
5.     <h4>Paris</h4>
6.     <p>Paris, France's capital, is a major European city and a global center **for** art, fashion, gastronomy and culture</p>
7. </aside>
8. </body>

### **HTML5 <section> Element**

The <section> element is used to represent the standalone section within an HTML document. A page can have various sections and each section can contain any content, but headings for each section is not mandatory.

Example:

1. <h2>Web designing Tutorial</h2>

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2. <section>
3. <h3>HTML</h3>
4. <p>HTML is an acronym which stands **for** Hyper Text Markup Language which is used **for** creating web pages and web applications.</p>
5. </section>
6. <section>
7. <h3>CSS</h3>
8. <p>CSS stands **for** Cascading Style Sheets. It is a style sheet language which is used to describe the look and formatting of a document written in markup language. It provides an additional feature to HTML.</p>
9. </section>

**Nesting <article> tag in <section> tag or Vice Versa?**

We know that the<article> element specifies independent, self-contained content and the <section> element defines section in a document.

In HTML, we can use <section> elements within <article> elements, and <article> elements within <section> elements.

We can also use <section> elements within <section> elements, and <article> elements within <article> elements.

***For example:***

In a newspaper, the sport <article> in the sport section, may have a technical section in each <article>.

**HTML5 <nav> Element**

The HTML <nav> element is used to define a set of navigation links.

Example:

1. <!DOCTYPE html>
2. <html>

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3. <body>
4. <nav>
5. <a href="https://www.javatpoint.com/html-tutorial">HTML</a> |
6. <a href="https://www.javatpoint.com/java-tutorial">Java</a> |
7. <a href="https://www.javatpoint.com/php-tutorial">PHP</a> |
8. <a href="https://www.javatpoint.com/css-tutorial">CSS</a>
9. </nav>
10. </body>
11. </html>

**HTML5 <header> Element**

The <header> element represent the header of the document which can contain introductory content or navigation links.

Example:

1. <header>
2. <h1>Welcome to Web123.com</h1>
3. <nav>
4. <ul>
5. <li>Home |</li>
6. <li>About us |</li>
7. <li>Contact us</li>
8. </ul>
9. </nav>
10. </header>

**HTML5 <footer> Element**

The <footer> tag defines the footer of an HTML document or page.

Example:

1. <footer>

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2. `<p>© Copyright 2019. All rights reserved. </p>`
3. `</footer>`

### **HTML5 Drag and Drop Example**

- Let's see an example of HTML 5 drag and drop feature.
- To understand this example, you must have the knowledge of JavaScript.

1. `<script>`
2. `function allowDrop(ev) {ev.preventDefault();}`
3. `function drag(ev) {ev.dataTransfer.setData("text/html", ev.target.id);}`
4. `function drop(ev) {`
5. `ev.preventDefault();`
6. `var data = ev.dataTransfer.getData("text/html");`
7. `ev.target.appendChild(document.getElementById(data));`
8. `}`
9. `</script>`
10. `<p>Drag the javatpoint image into the rectangle:</p>`
11. `<div id="div1" style="width:350px;height:100px;padding:10px;border:1px solid #aaaaaa;"`
12. `ondrop="drop(event)" ondragover="allowDrop(event)"></div>`
13. `<br>`
14. ``

In the above example, we have used **ondrop** and **ondragover** events on **div** element, and **ondragstart** event on **img** tag.

### **HTML Audio Tag**

**HTML audio tag** is used to define sounds such as music and other audio clips. Currently there are three supported file format for HTML 5 audio tag.

1. mp3






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2. wav
3. ogg

HTML5 supports <video> and <audio> controls. The Flash, Silverlight and similar technologies are used to play the multimedia items.

This table defines that which web browser supports which audio file format.

Browser	mp3	wav	ogg
 Internet Explorer	yes	no	no
 Google Chrome	yes	yes	yes
 Mozilla Firefox	yes*	yes	yes
 Opera	no	yes	yes
 Apple Safari	yes	yes	no

### HTML Audio Tag Example

Let's see the code to play mp3 file using HTML audio tag.

1. <audio controls>
2. <source src="koyal.mp3" type="audio/mpeg">
3. Your browser does not support the html audio tag.
4. </audio>

Output:

Let's see the example to play ogg file using HTML audio tag.

1. <audio controls>

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2. `<source src="koyal.ogg" type="audio/ogg">`
3. Your browser does not support the html audio tag.
4. `</audio>`

### **Attributes of HTML Audio Tag**

There is given a list of HTML audio tag.

Attribute	Description
controls	It defines the audio controls which is displayed with play/pause buttons.
autoplay	It specifies that the audio will start playing as soon as it is ready.
loop	It specifies that the audio file will start over again, every time when it is completed.
muted	It is used to mute the audio output.
preload	It specifies the author view to upload audio file when the page loads.
src	It specifies the source URL of the audio file.

### **HTML Audio Tag Attribute Example**

Here we are going to use controls, autoplay, loop and src attributes of HTML audio tag.

1. `<audio controls autoplay loop>`
  2. `<source src="koyal.mp3" type="audio/mpeg"></audio>`
- 

### **MIME Types for HTML Audio format**

The available MIME type HTML audio tag is given below.

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Audio Format	MIME Type
mp3	audio/mpeg
ogg	audio/ogg
wav	audio/wav




### **HTML Video Tag**

HTML 5 supports <video> tag also. The HTML video tag is used for streaming video files such as a movie clip, song clip on the web page.

Currently, there are three video formats supported for HTML video tag:



1. mp4
2. webM
3. ogg

Let's see the table that defines which web browser supports video file format.

Browser	mp4	webM	ogg
 Internet Explorer	yes	no	no
 Google Chrome	yes	yes	yes
 Mozilla Firefox	yes	yes	yes

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 Opera	no	yes	yes
 Apple Safari	yes	no	no

### HTML Video Tag Example

Let's see the code to play mp4 file using HTML video tag.

1. **<video controls>**
2. **<source src="movie.mp4" type="video/mp4">**
3. Your browser does not support the html video tag.
4. **</video>**

Let's see the example to play ogg file using HTML video tag.

1. **<video controls>**
2. **<source src="movie.ogg" type="video/ogg">**
3. Your browser does not support the html video tag.
4. **</video>**

---

### Attributes of HTML Video Tag

Let's see the list of HTML 5 video tag attributes.

Attribute	Description
controls	It defines the video controls which is displayed with play/pause buttons.
height	It is used to set the height of the video player.
width	It is used to set the width of the video player.



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poster	It specifies the image which is displayed on the screen when the video is not played.
autoplay	It specifies that the video will start playing as soon as it is ready.
loop	It specifies that the video file will start over again, every time when it is completed.
muted	It is used to mute the video output.
preload	It specifies the author view to upload video file when the page loads.
src	It specifies the source URL of the video file.

### HTML Video Tag Attribute Example

Let's see the example of video tag in HTML where are using height, width, autoplay, controls and loop attributes.

1. `<video width="320" height="240" controls autoplay loop>`
2. `<source src="movie.mp4" type="video/mp4">`
3. Your browser does not support the html video tag.
4. `</video>`

### MIME Types for HTML Video format

The available MIME type HTML video tag is given below.

Video Format	MIME Type
mp4	video/mp4
ogg	video/ogg

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webM	video/webM
------	------------

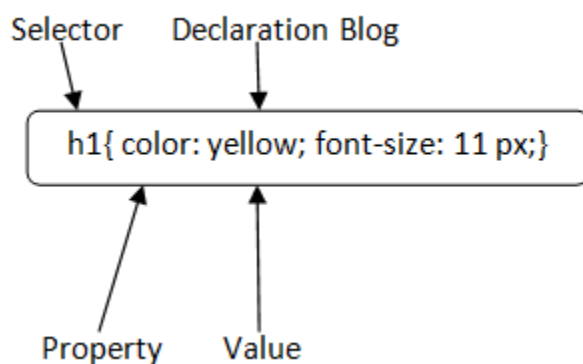
### **1.9.CSS Tutorial**

**CSS tutorial** or CSS 3 tutorial provides basic and advanced concepts of CSS technology. Our CSS tutorial is developed for beginners and professionals. The major points of CSS are given below:

- CSS stands for Cascading Style Sheet.
- CSS is used to design HTML tags.
- CSS is a widely used language on the web.
- HTML, CSS and JavaScript are used for web designing. It helps the web designers to apply style on HTML tags.

### **CSS Syntax**

A CSS rule set contains a selector and a declaration block.



**Selector:** Selector indicates the HTML element you want to style. It could be any tag like <h1>, <title> etc.

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**Declaration Block:** The declaration block can contain one or more declarations separated by a semicolon. For the above example, there are two declarations:

1. color: yellow;
2. font-size: 11 px;

Each declaration contains a property name and value, separated by a colon.

**Property:** A Property is a type of attribute of HTML element. It could be color, border etc.

**Value:** Values are assigned to CSS properties. In the above example, value "yellow" is assigned to color property.

1. Selector{Property1: value1; Property2: value2; .....;}

### **How to add CSS**

CSS is added to HTML pages to format the document according to information in the style sheet. There are three ways to insert CSS in HTML documents.

1. Inline CSS
2. Internal CSS
3. External CSS

### **Inline CSS**

We can apply CSS in a single element by inline CSS technique.

The inline CSS is also a method to insert style sheets in HTML document. This method mitigates some advantages of style sheets so it is advised to use this method sparingly.

If you want to use inline CSS, you should use the style attribute to the relevant tag.

Syntax:

1. `<htmltag style="cssproperty1:value; cssproperty2:value;"> </htmltag>`

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Example:

1. **<h2 style="color:red;margin-left:40px;">Inline CSS is applied on this heading.</h2>**
2. **<p>This paragraph is not affected.</p>**

Output:

Inline CSS is applied on this heading.

This paragraph is not affected.

### **Internal CSS**

The internal style sheet is used to add a unique style for a single document. It is defined in <head> section of the HTML page inside the <style> tag.

Example:

1. **<!DOCTYPE html>**
2. **<html>**
3. **<head>**
4. **<style>**
5. **body {**
6. **background-color: linen;**
7. **}**
8. **h1 {**
9. **color: red;**
10. **margin-left: 80px;**
11. **}**
12. **</style>**
13. **</head>**
14. **<body>**
15. **<h1>The internal style sheet is applied on this heading.</h1>**
16. **<p>This paragraph will not be affected.</p>**

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17. `</body>`

18. `</html>`

**The internal style sheet is applied on this heading.**

This paragraph will not be affected.

### **External CSS**

The external style sheet is generally used when you want to make changes on multiple pages. It is ideal for this condition because it facilitates you to change the look of the entire web site by changing just one file.

It uses the `<link>` tag on every pages and the `<link>` tag should be put inside the head section.

Example:

1. `<head>`
2. `<link rel="stylesheet" type="text/css" href="mystyle.css">`
3. `</head>`

The external style sheet may be written in any text editor but must be saved with a .css extension. This file should not contain HTML elements.

Let's take an example of a style sheet file named "mystyle.css".

*File: mystyle.css*

1. `body {`
2. `background-color: lightblue;`
3. `}`

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4. h1 {
5.     color: navy;
6.     margin-left: 20px;
7. }

Note: You should not use a space between the property value and the unit. For example: It should be margin-left:20px not margin-left:20 px.

### **CSS Selector**

**CSS selectors** are used *to select the content you want to style*. Selectors are the part of CSS rule set. CSS selectors select HTML elements according to its id, class, type, attribute etc.

There are several different types of selectors in CSS.

1. CSS Element Selector
2. CSS Id Selector
3. CSS Class Selector
4. CSS Universal Selector
5. CSS Group Selector

#### **1) CSS Element Selector**

The element selector selects the HTML element by name.

1. <!DOCTYPE html>
2. <html>
3. <head>
4. <style>
5. p{
6.     text-align: center;
7.     color: blue;
8. }
9. </style>
10. </head>

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11. **<body>**
12. **<p>**This style will be applied on every paragraph.**</p>**
13. **<p id="para1">**Me too!**</p>**
14. **<p>**And me!**</p>**
15. **</body>**
16. **</html>**

## **2) CSS Id Selector**

The id selector selects the id attribute of an HTML element to select a specific element. An id is always unique within the page so it is chosen to select a single, unique element.

It is written with the hash character (#), followed by the id of the element.

Let's take an example with the id "para1".

1. **<!DOCTYPE html>**
2. **<html>**
3. **<head>**
4. **<style>**
5. **#para1 {**
6. **text-align: center;**
7. **color: blue;**
8. **}**
9. **</style>**
10. **</head>**
11. **<body>**
12. **<p id="para1">**Hello Javatpoint.com**</p>**
13. **<p>**This paragraph will not be affected.**</p>**
14. **</body>**
15. **</html>**

Output:

Hello Javatpoint.com

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This paragraph will not be affected.

---

### 3) CSS Class Selector

The class selector selects HTML elements with a specific class attribute. It is used with a period character . (full stop symbol) followed by the class name.

*Note: A class name should not be started with a number.*

Let's take an example with a class "center".

1. <!DOCTYPE html>
2. <html>
3. <head>
4. <style>
5. .center {
6.     text-align: center;
7.     color: blue;
8. }
9. </style>
10. </head>
11. <body>
12. <h1 class="center">This heading is blue and center-aligned.</h1>
13. <p class="center">This paragraph is blue and center-aligned.</p>
14. </body>
15. </html>

Output:

This heading is blue and center-aligned.

This paragraph is blue and center-aligned.



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### **CSS Class Selector for specific element**

If you want to specify that only one specific HTML element should be affected then you should use the element name with class selector.

Let's see an example.

1. `<!DOCTYPE html>`
2. `<html>`
3. `<head>`
4. `<style>`
5. `p.center {`
6. `text-align: center;`
7. `color: blue;`
8. `}`
9. `</style>`
10. `</head>`
11. `<body>`
12. `<h1 class="center">This heading is not affected</h1>`
13. `<p class="center">This paragraph is blue and center-aligned.</p>`
14. `</body>`
15. `</html>`

Output:

This heading is not affected

This paragraph is blue and center-aligned.

---

### **4) CSS Universal Selector**

The universal selector is used as a wildcard character. It selects all the elements on the pages.

1. `<!DOCTYPE html>`

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2. **<html>**
3. **<head>**
4. **<style>**
5. **\* {**
6.     **color: green;**
7.     **font-size: 20px;**
8. **}**
9. **</style>**
10. **</head>**
11. **<body>**
12. **<h2>**This is heading**</h2>**
13. **<p>**This style will be applied on every paragraph.**</p>**
14. **<p id="para1">**Me too!**</p>**
15. **<p>**And me!**</p>**
16. **</body>**
17. **</html>**

Output:

This is heading

This style will be applied on every paragraph.

Me too!

And me!

---

## **5) CSS Group Selector**

The grouping selector is used to select all the elements with the same style definitions.

Grouping selector is used to minimize the code. Commas are used to separate each selector in grouping.

Let's see the CSS code without group selector.

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1. h1 {
2.     text-align: center;
3.     color: blue;
4. }
5. h2 {
6.     text-align: center;
7.     color: blue;
8. }
9. p {
10.    text-align: center;
11.    color: blue;
12. }

As you can see, you need to define CSS properties for all the elements. It can be grouped in following ways:

1. h1,h2,p {
2.     text-align: center;
3.     color: blue;
4. }

Let's see the full example of CSS group selector.

1. <!DOCTYPE html>
2. <html>
3. <head>
4. <style>
5. h1, h2, p {
6.     text-align: center;
7.     color: blue;
8. }
9. </style>
10. </head>

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11. **<body>**
12. **<h1>**Hello Javatpoint.com**</h1>**
13. **<h2>**Hello Javatpoint.com (In smaller font)**</h2>**
14. **<p>**This is a paragraph.**</p>**
15. **</body>**
16. **</html>**

### **CSS Background**

CSS background property is used to define the background effects on element. There are 5 CSS background properties that affects the HTML elements:

1. background-color
2. background-image
3. background-repeat
4. background-attachment
5. background-position

---

#### **1) CSS background-color**

The background-color property is used to specify the background color of the element.

You can set the background color like this:

1. **<!DOCTYPE html>**
2. **<html>**
3. **<head>**
4. **<style>**
5. h2,p{
6.     background-color: #b0d4de;
7. }
8. **</style>**

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9. `</head>`
10. `<body>`
11. `<h2>`My first CSS page.`</h2>`
12. `<p>`Hello Javatpoint. This is an example of CSS background-color.`</p>`
13. `</body>`
14. `</html>`

Output:

My first CSS page.

Hello Javatpoint. This is an example of CSS background-color.

---

## 2) CSS background-image

The background-image property is used to set an image as a background of an element. By default the image covers the entire element. You can set the background image for a page like this.

1. `<!DOCTYPE html>`
2. `<html>`
3. `<head>`
4. `<style>`
5. `body {`
6. `background-image: url("paper1.gif");`
7. `margin-left:100px;`
8. `}`
9. `</style>`
10. `</head>`
11. `<body>`
12. `<h1>`Hello Javatpoint.com`</h1>`
13. `</body>`
14. `</html>`

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Note: The background image should be chosen according to text color. The bad combination of text and background image may be a cause of poor designed and not readable webpage.

---

### **3) CSS background-repeat**

By default, the background-image property repeats the background image horizontally and vertically. Some images are repeated only horizontally or vertically.

The background looks better if the image repeated horizontally only.

**background-repeat: repeat-x;**

1. <!DOCTYPE html>
2. <html>
3. <head>
4. <style>
5. body {
6.   background-image: url("gradient\_bg.png");
7.   background-repeat: repeat-x;
8. }
9. </style>
10. </head>
11. <body>
12. <h1>Hello Javatpoint.com</h1>
13. </body>
14. </html>

**background-repeat: repeat-y;**

1. <!DOCTYPE html>
2. <html>
3. <head>
4. <style>
5. body {

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6. background-image: url("gradient\_bg.png");
7. background-repeat: repeat-y;
8. }
9. </style>
10. </head>
11. <body>
12. <h1>Hello Javatpoint.com</h1>
13. </body>
14. </html>

#### **4) CSS background-attachment**

The background-attachment property is used to specify if the background image is fixed or scroll with the rest of the page in browser window. If you set fixed the background image then the image will not move during scrolling in the browser. Let's take an example with fixed background image.

1. background: white url('bbb.gif');
2. background-repeat: no-repeat;
3. background-attachment: fixed;

**Test it Now**

---

#### **5) CSS background-position**

The background-position property is used to define the initial position of the background image. By default, the background image is placed on the top-left of the webpage.

You can set the following positions:

1. center
2. top
3. bottom
4. left
5. right

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1. background: white url('good-morning.jpg');
2. background-repeat: no-repeat;
3. background-attachment: fixed;
4. background-position: center;

**CSS border-image property**

- This CSS property defines an image to be used as the element's border. It draws an image outside the element and replaces the element's border with the corresponding image. It is an interesting task to replace the border of an element with the image.
- The **border-image** property can be applied to all elements except the elements of the internal table (such as tr, th, td) when **border-collapse** is set to **collapse**.
- It is the shorthand property for **border-image-source**, **border-image-slice**, **border-image-width**, **border-image-outset**, and **border-image-repeat**. We can set all these properties at once using the **border-image** property. If any of the values are not specified, then they set to their default values. The default value of this property is:

1. border-image: none 100% 1 0 stretch

Syntax

1. border-image: source slice width outset repeat | initial | inherit;

The values of this property are tabulated as follows.

Values	Description
<b>border-image-source:</b>	It specifies the source of the border-image. It sets the path of the image, or we can say that it specifies the location of the image to be used as the border.



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<b>border-image-slice:</b>	<p>It is used to divide or slice the image, which is specified by the <b>border-image-source</b> property. The values of this property specify how to slice the image for creating the pieces of the border. This property divides the image into nine sections that are:</p> <ul style="list-style-type: none"><li>○ Four corners</li><li>○ Four sides, and</li><li>○ a center region</li></ul> <p>It can accept four unitless positive values. Its default value is <b>100%</b>.</p>
<b>border-image-width:</b>	<p>It sets the width of the border-image. It can accept a unitless positive value, a percentage value, or the keyword <b>auto</b>. Its default value is <b>1</b>. We can specify up to four values for providing the width of individual sides.</p>
<b>border-image-outset:</b>	<p>It sets the amount of space by which the border image is set out from its border box.</p>
<b>border-image-repeat:</b>	<p>It controls the repetition of the image to fill the area of the border. We can specify up to two values for this property. If we specify one value, then it is applied on both vertical and horizontal sides. But if we specify two values, then the first value is applied on horizontal sides, and the second value is applied on vertical sides. The values of this property are listed below.</p> <ul style="list-style-type: none"><li>○ stretch</li><li>○ repeat</li><li>○ round</li><li>○ space</li></ul> <p>The default value of this property is <b>stretch</b>.</p>
<b>Initial</b>	<p>It sets the property to its default value (<b>border-image: none 100% 1 0 stretch</b> ).</p>

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<b>inherit</b>	It inherits the property from its parent element.
----------------	---

Now, let's see some of the examples to understand how to set the border-image using the **border-image** property.

#### Example

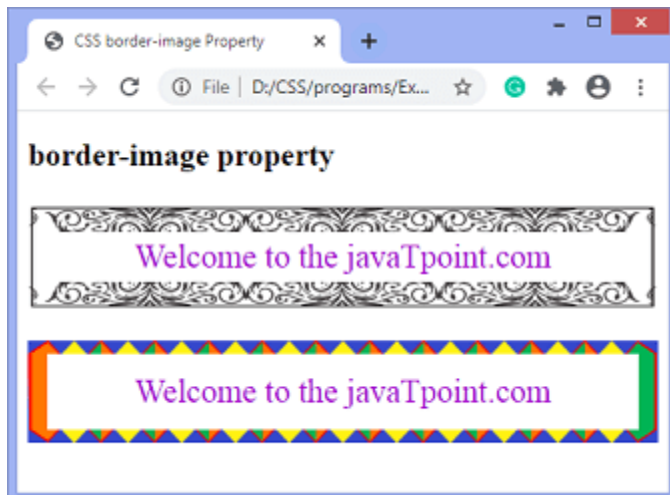
In this example, we are replacing the border of the paragraph elements with the image. In the first paragraph, we are specifying the single value (i.e., **round**) of the **border-image-repeat** property, whereas in the second paragraph, we are specifying two values (**round, stretch**) of it, the first value for the horizontal sides and second value for the vertical sides.

1. <!DOCTYPE html>
2. <html>
3. <head>
4. <title>
5. CSS border-image Property
6. </title>
- 7.
8. <style>
9. p{
10. border: 10px solid transparent;
11. padding: 15px;
12. text-align:center;
13. font-size: 25px;
14. color: darkviolet;
15. }
16. #border {
17. border-image: url('border.png') 60 / 20px 20px round;
- 18.
19. }
20. #border1 {
21. border-image: url('diamond.png') 43 / 10px 15px round stretch;

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```
22.  
23. }  
24. </style>  
25. </head>  
26.  
27. <body>  
28. <h2>border-image property</h2>  
29.  
30. <p id = "border">  
31. Welcome to the javaTpoint.com  
32. </p>  
33. <p id = "border1">  
34. Welcome to the javaTpoint.com  
35. </p>  
36. </body>  
37. </html>
```

### Output



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### **CSS Colors**

The color property in CSS is used to set the color of HTML elements. Typically, this property is used to set the background color or the font color of an element.

In CSS, we use color values for specifying the color. We can also use this property for the border-color and other decorative effects.

We can define the color of an element by using the following ways:

- RGB format.
- RGBA format.
- Hexadecimal notation.
- HSL.
- HSLA.
- Built-in color.

Let's understand the syntax and description of the above ways in detail.

### **RGB Format**

RGB format is the short form of '**RED GREEN** and **BLUE**' that is used for defining the color of an HTML element simply by specifying the values of R, G, B that are in the range of 0 to 255.

The color values in this format are specified by using the **rgb()** property. This property allows three values that can either be in percentage or integer (range from 0 to 255).

This property is not supported in all browsers; that's why it is not recommended to use it.

### **Syntax**

1. color: rgb(R, G, B);

### **RGBA Format**

It is almost similar to RGB format except that **RGBA** contains **A (Alpha)** that specifies the element's transparency. The value of alpha is in the range **0.0 to 1.0**, in which **0.0** is for fully transparent, and **1.0** is for not transparent.

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**Syntax**

1. `color:rgba(R, G, B, A);`

**Hexadecimal notation**

Hexadecimal can be defined as a six-digit color representation. This notation starts with the **#** symbol followed by six characters ranges from **0 to F**. In hexadecimal notation, the first two digits represent the **red (RR)** color value, the next two digits represent the **green (GG)** color value, and the last two digits represent the **blue (BB)** color value.

The black color notation in hexadecimal is #000000, and the white color notation in hexadecimal is #FFFFFF. Some of the codes in hexadecimal notation are #FF0000, #00FF00, #0000FF, #FFFF00, and many more.

**Syntax**

1. `color: #(0-F)(0-F)(0-F)(0-F)(0-F)(0-F);`

**Short Hex codes**

It is a short form of hexadecimal notation in which every digit is recreated to arrive at an equivalent hexadecimal value.

For example, #7B6 becomes #77BB66 in hexadecimal.

The black color notation in short hex is #000, and the white color notation in short hex is #FFF. Some of the codes in short hex are #F00, #0F0, #0FF, #FF0, and many more.

**HSL**

It is a short form of **Hue, Saturation, and Lightness**. Let's understand them individually.

**Hue:** It can be defined as the degree on the color wheel from 0 to 360. 0 represents red, 120 represents green, 240 represents blue.

**Saturation:** It takes value in percentage in which 100% represents fully saturated, i.e., no shades of gray, 50% represent 50% gray, but the color is still visible, and 0% represents fully unsaturated, i.e., completely gray, and the color is invisible.

**Lightness:** The lightness of the color can be defined as the light that we want to provide the color in which 0% represents black (there is no light), 50% represents neither dark nor light, and 100% represents white (full lightness).

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Let's see the syntax of HSL in color property.

**Syntax**

1. color:hsl(H, S, L);

**HSLA**

It is entirely similar to HSL property, except that it contains **A (alpha)** that specifies the element's transparency. The value of alpha is in the range **0.0 to 1.0**, in which **0.0** indicates fully transparent, and **1.0** indicates not transparent.

**Syntax**

1. color:hsla(H, S, L, A);

**Built-in Color**

As its name implies, built-in color means the collection of previously defined colors that are used by using a name such as red, blue, green, etc.

**Syntax**

1. color: color-name;

Let's see the list of built-in colors along with their decimal and hexadecimal values.

S.no.	Color name	Hexadecimal Value	Decimal Value or rgb() value
1.	Red	#FF0000	rgb(255,0,0)
2.	Orange	#FFA500	rgb(255,165,0)
3.	Yellow	#FFFF00	rgb(255,255,0)
4.	Pink	#FFC0CB	rgb(255,192,203)

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<b>5.</b>	Green	#008000	rgb(0,128,0)
<b>6.</b>	Violet	#EE82EE	rgb(238,130,238)
<b>7.</b>	Blue	#0000FF	rgb(0,0,255)
<b>8.</b>	Aqua	#00FFFF	rgb(0,255,255)
<b>9.</b>	Brown	#A52A2A	rgb(165,42,42)
<b>10.</b>	White	#FFFFFF	rgb(255,255,255)
<b>11.</b>	Gray	#808080	rgb(128,128,128)
<b>12.</b>	Black	#000000	rgb(0,0,0)

The illustration of CSS colors, which includes the above properties, is given below.

Example

1. **<html>**
2.     **<head>**
3.         **<title>**CSS hsl color property**</title>**
4.         **<style>**
5.             h1{
6.                 text-align:center;
7.             }
8.             #rgb{
9.                 color:rgb(255,0,0);
10.             }

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```
11.     #rgba{
12.         color:rgba(255,0,0,0.5);
13.     }
14.     #hex{
15.         color:#EE82EE;
16.     }
17.     #short{
18.         color: #E8E;
19.     }
20.     #hsl{
21.         color:hsl(0,50%,50%);
22.     }
23.     #hsla{
24.         color:hsla(0,50%,50%,0.5);
25.     }
26.     #built{
27.         color:green;
28.     }
29.     </style>
30. </head>
31. <body>
32.     <h1 id="rgb">
33.         Hello World. This is RGB format.
34.     </h1>
35.     <h1 id="rgba">
36.         Hello World. This is RGBA format.
37.     </h1>
38.     <h1 id="hex">
39.         Hello World. This is Hexadecimal format.
40.     </h1>
41.     <h1 id="short">
```



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42. Hello World. This is Short-hexadecimal format.

43. **</h1>**

44. **<h1 id="hsl">**

45. Hello World. This is HSL format.

46. **</h1>**

47. **<h1 id="hsla">**

48. Hello World. This is HSLA format.

49. **</h1>**

50. **<h1 id="built">**

51. Hello World. This is Built-in color format.

52. **</h1>**

53. **</body>**

54. **</html>**

Example:

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**It is a shadow box that has h-offset, v-offset and blur attributes.**

**It is a box that includes the spread attribute.**

**It is a box that includes the color attribute.**

**It is a box that includes the inset attribute.**

**It is a box that includes the initial attribute.**

**It is a box that includes the default attribute i.e. none.**

### **CSS Text-shadow**

As its name implies, this CSS property adds shadows to the text. It accepts the comma-separated list of shadows that applied to the text. It's default property is none. It applies one or more than one text-shadow effect on the element's text content.

Let's see the syntax of text-shadow property.

#### **Syntax**

1. text-shadow: h-shadow v-shadow blur-radius color| none | initial | inherit;

#### **Values**

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**h-shadow:** It is the required value. It specifies the position of the horizontal shadow and allows negative values.

**v-shadow:** It is also the required value that specifies the position of the vertical shadow. It does not allow negative values.

**blur-radius:** It is the blur-radius, which is an optional value. Its default value is 0.

**color:** It is the color of the shadow and also an optional value.

**none:** It is the default value, which means no shadow.

**initial:** It is used to set the property to its default value.

**inherit:** It simply inherits the property from its parent element.

Let's understand it by using some illustrations.

Example- Simple shadow

1. <!DOCTYPE html>
- 2.
3. <html>
4. <head>
5.     <title> font-weight property </title>
6.     <style>
7.         p.simple{
8.             text-shadow: 3px 3px red;
9.         }
10.     </style>
11. </head>
- 12.
13. <body>
14.     <p class="simple">
15.         Simple Shadow

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- 16. `</p>`
- 17.
- 18. `</body>`
- 19. `</html>`

Output:

Simple Shadow

---

### **Text Transformation**

The text-transform property is used to specify uppercase and lowercase letters in a text.

It can be used to turn everything into uppercase or lowercase letters, or capitalize the first letter of each word:

Example:

```
<!DOCTYPE html>
```

```
<html>
```

```
<head>
```

```
<style>
```

```
p.uppercase {
```

```
    text-transform: uppercase;
```

```
}
```

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```
p.lowercase {  
    text-transform: lowercase;  
}
```

```
p.capitalize {  
    text-transform: capitalize;  
}
```

```
</style>
```

```
</head>
```

```
<body>
```

```
<h1>Using the text-transform property</h1>
```

```
<p class="uppercase">This text is transformed to uppercase.</p>
```

```
<p class="lowercase">This text is transformed to lowercase.</p>
```

```
<p class="capitalize">This text is capitalized.</p>
```

```
</body>
```

```
</html>
```

Output:

# Using the text-transform property

THIS TEXT IS TRANSFORMED TO UPPERCASE.

this text is transformed to lowercase.

This Text Is Capitalized.

---

## CSS Transitions

CSS transitions allows you to change property values smoothly, over a given duration.

- transition
- transition-delay
- transition-duration
- transition-property
- transition-timing-function

[https://www.w3schools.com/css/css3\\_transitions.asp](https://www.w3schools.com/css/css3_transitions.asp)

## **CSS Animations**

CSS allows animation of HTML elements without using JavaScript!

- @keyframes
- animation-name
- animation-duration
- animation-delay
- animation-iteration-count
- animation-direction
- animation-timing-function
- animation-fill-mode
- animation

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[https://www.w3schools.com/css/css3\\_animations.asp](https://www.w3schools.com/css/css3_animations.asp)